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13. ABSTRACT (Maximum 200 words) The fifth St. Louis Workshop in Wide Bandgap Nitrides was held August 4-7, 1998 in St. Louis, MO. The workshop was attended by some 80 researchers from mainly the United States and very topical and bottleneck type problems/issues were discussed. The workshop is unique in its approach in that short presentations on pertinent issues are followed by lengthy discussion. Following a group of somewhat related presentations, an overall discussion period involving the authors of that session and the audience is conducted. The forum provides a plenty of time for discussions of important and unresolved issues as opposed presenting polished and infished results typically presented in standard/conventional meeting. The participants over the years have been and are still supportive of the role the workshop plays for the community. It should be mentioned that this workshop carries the distinction of being the first ever meeting in the field in the world.				
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**FINAL REPORT**  
**FIFTH ST. LOUIS WORKSHOP ON WIDE BANDGAP  
NITRIDES**

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## Final report, fifth St. Louis Workshop on Wide Bandgap Nitrides

The fifth St. Louis Workshop in Wide Bandgap Nitrides was held August 4-7, 1998 in St. Louis, MO. The workshop was attended by some 80 researchers from mainly the United States and very topical and bottleneck type problems/issues were discussed. The workshop is unique in its approach in that short presentations on pertinent issues are followed by lengthy discussion. Following a group of somewhat related presentations, an overall discussion period involving the authors of that session and the audience is conducted. The forum provides a plenty of time for discussions of important and unresolved issues as opposed presenting polished and finished results typically presented in standard/conventional meeting. The participants over the years have been and are still supportive of the role the workshop plays for the community. It should be mentioned that this workshop carries the distinction of being the first ever meeting in the field in the world.

In 1992 the first-ever Nitride Workshop, and in October 1994 the second, in March 1996 the third, in October 1997 the fourth one, and in August 1998 the fifth one were convened with great successes, bringing together practitioners and theorists, and those who are in a position to have an impact. Much progress has been made toward realizing many of the concepts presented in the first and the second workshops. The response of participants to the first, second, third and fourth workshops was very enthusiastic, and many inquiries have been received since concerning the fifth workshop. A fifth such workshop held in an open forum will facilitate exchange of knowledge and information about recent developments in equipment, growth methods, growth issues particular to each method including lateral growth and associated spatial migration rates, new theoretical findings, dopant (both n and p type) incorporation and likely approaches to be employed, and potential applications to emitters, detectors and electronic devices. In particular the nitride community is at a turning point with respect to the best suited nitrogen source for vacuum deposition and surfactants to enhance migration rates. A workshop of this kind is ideal for bringing the experts in the field together for a hearty discussion of pivotal issues, such as defects, substrates, dopants, and other issues pertinent to devices for rapid progress to follow.

This report contains the announcement for the workshop, abstracts that have been submitted in addition to the solicited speakers, and the workshop program.

# FIFTH ST. LOUIS WORKSHOP ON WIDE BANDGAP NITRIDES ANNOUNCEMENT

Fifth Wide Bandgap Nitride Semiconductor Workshop  
Adams Mark Hotel, St. Louis MO USA  
August 4-7, 1998

The Fifth Workshop on Wide Bandgap Nitride Semiconductors will be held at the Adam's Mark Hotel near the famous St. Louis Gateway Arch by the Mississippi River in St. Louis, MO, on August 4-7, 1998. This date was previously selected and announced at the Fourth Workshop in March 1997. As you probably know, this is the location at which the previous four Workshops have been held.

The registration information, including the registration fee and the information on where to send the registration fee will be sent in the very near future.

Commencing with a reception on Tuesday evening, August 4, 1998 at 6:00 PM, the Workshop attendees will be treated to the famed Adam's Mark breakfast, lunch, and dinner, as well as coffee breaks on each of the three conference days, except that lunch will not be provided on Friday, August 7, due to the fact that no technical sessions will be scheduled for Friday afternoon.

In making hotel reservations, be certain to mention that you will be attending the Fifth Workshop on Wide-Bandgap Nitrides with local arrangements by Prof. Hadis Morkoç, Virginia Commonwealth University. The key words that will be used by the hotel reservation personnel are "Wide-Bandgap Nitride Workshop", so please fully identify the workshop by this name. Rates are \$115 and \$125 for single- and double-occupancy, respectively. The hotel can often be full during the time of this conference. Consequently, it is imperative that you make your reservation early. A limited number of rooms with government rates is also available, however, be certain to mention it at the time you make your hotel reservation. You must present your government ID at the time of registration to qualify for this rate. After July 3, 1998, the block of reserved rooms will be released for sale to the general public. For reservations call TEL: (314) 241-7400, FAX: (314) 241-6618. The Adam's Mark Hotel is located at Fourth and Chestnut Streets, St. Louis, MO 63102, approximately five minutes from Union Station, adjacent to the Gateway Arch.

St. Louis' Lambert International Airport can be easily accessed by air from most cities in the United States and many major cities throughout the world. The airport limousine costs about \$10 per person one way and \$15 round trip with pick up at Door 13 by the Baggage Claim Area.

We look forward to seeing you in St. Louis in August!

Russell D. Dupuis, Workshop Program Chair (dupuis@mail.utexas.edu, 512 471-0537).

Hadis Morkoç, Workshop Arrangements Chair (hmorkoc@vcu.edu, 804 828-0181).

**Fifth Wide Bandgap Nitride Semiconductor Workshop Schedule,  
St. Louis MO, 4-7 August 1998**

Session	Time	Authors (Presenter's Name in Bold)	Contact e-Mail	Title of Talk
<b>TUE 8/4</b>	4-8PM	<b>WORKSHOP REGISTRATION OPEN</b>		
<b>Reception</b>	6:00	<b>WORKSHOP WELCOMING RECEPTION — Adam's Mark Hotel (Room ???)</b>		
<b>WED 8/5</b>	7:15	<b>CONTINENTAL BREAKFAST</b>		
<b>WA-0</b>	8:15	<b>WELCOME AND OPENING REMARKS — Hadis Morkoç, Russell Dupuis</b>		
<b>WA-1</b>	8:30	<b>Bulk Substrates and MBE —</b>		
<b>WA 1.1</b>	8:45	M. Suscavage, M. Harris, D. Bliss, P. Yip, S. Q. Wang, D. Schwall, L. Bouthilllette, <b>M. N. Alexander</b> , J. Bailey, M. Callahan, D. C. Look, D. C. Reynolds, R. L. Jones, and C. W. Litton	alexande@maxwell.rl.plh.af.mil	High Quality Hydrothermal ZnO Crystals
<b>WA-1.2</b>	9:00	<b>L. J. Schowalter</b>	schowl@rpi.edu	Bulk AlN Substrate Characterization
<b>WA-1.3</b>	9:15	<b>J. E. Nause</b> and G. Agarwal	cerneming@juno.com	Growth of Bulk ZnO Crystals for Wide Bandgap Applications
<b>WA-1.4</b>	9:30	R. Held, S. Seutter, B. E. Ishaug, A. Parkhomovsky, A. M. Dabiran, <b>P. I. Cohen</b> , G. Knowak, I. Grzegory, and S. Porowski	cohen@ece.umn.edu	Nitride MBE on Bulk Substrates
<b>WA-1.5</b>	9:45	<b>C. W. Litton</b> , D. C. Reynolds, J. Van Nostrand, D. C. Look, R. L. Jones, F. Hamandi, H. Tang, W. Kim, A. Salvador, A. Botcharov, M. Yeadon, J. Gibson, D. J. Smith, M. Skowronski, and H. Morkoç	litton@el.wpafb.af.mil	Reactive MBE Growth and Characterization of GaN on the Polar Faces of Bulk C-plane ZnO Substrates
<b>WA-1HT</b>	10:00	<b>Short Presentations &amp; Hot Topic Discussions</b>		
	10:15	<b>BREAK</b>		
<b>WA-2</b>	10:30	<b>Nitride Epitaxy I (MBE and VPE) —</b>		
<b>WA-2.1</b>	10:30	<b>W. J. Schaff</b> , M. Murphy, T. Eustis, H. Wu, W. Yeo, O. Ambacher, J. Smart, J. R. Shealy and L. F. Eastman	schaff@iiv.tn.cornell.edu	MBE Growth of Normal and Inverted 2-dimensional Electron Gases in GaN
<b>WA-2.2</b>	10:45	<b>H. Morkoç</b>	hmorkoc@vcu.edu	MBE Growth of Nitride Materials
<b>WA-2.3</b>	11:00	R. Beccard, M. Heuken, <b>H. Juergensen</b> , O. Parillaud, M. Illegems	juer@aixtron.com	Design Issues and Operation of GaN Hydride VPE Systems
<b>WA-2.4</b>	11:15	A. E. Nikolaev, Y. V. Melnik, N. I. Kuznetsov, and V. <b>A. Dmitriev</b>	vladimir@tdli.com	Insulating GaN Grown on SiC by HVPE
<b>WA-2.5</b>	11:30	Y. V. Melnik, A. E. Nikolaev, S. I. Stepanov, and V. <b>A. Dmitriev</b>	vladimir@tdli.com	Aluminum Nitride Grown by HVPE
<b>WA-2HT</b>	11:45	<b>Short Presentations &amp; Hot Topic Discussions</b>		

12/6/98

*Fifth Wide Bandgap Nitride Semiconductor Workshop Schedule,  
St. Louis MO, 4-7 August 1998*

	12:00	LUNCH—Adam's Mark Hotel Room ???	
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**Fifth Wide Bandgap Nitride Semiconductor Workshop Schedule,  
St. Louis MO, 4-7 August 1998**

Session	Time	Authors (Presenter's Name in Bold)	Contact e-Mail	Title of Talk
<b>WP-1</b>	1:30	<b>Nitride Epitaxy II (MOCVD and MBE) and Materials Processing</b>		
<b>WP-1.1</b>	1:30	D. Doppalapudi, M. Misra, D. Korakakis, E. Iliopoulos, S. N. Basu, K. F. Ludwig, Jr., and T. D. Moustakas	tdm@panda.bu.edu	Long-Range Atomic Ordering in InGaAlN Alloys
<b>WP-1.2</b>	1:45	S. Keller, S. F. Chichibu, M. S. Minsky, A. C. Abare, L. A. Coldren, U. K. Mishra, and S. P. DenBaars	stacia@ece.ucsb.edu	MOCVD Growth of InGaN/GaN Single and Multi Quantum Wells
<b>WP-1.3</b>	2:00	M. A. Khan, J. Yang, and T. W. Weeks, Jr.	asif@engr.sc.edu	MOCVD of III-Nitrides for Optoelectronic and Microelectronic Device Applications
<b>WP-1.4</b>	2:15	J. R. Shealy	shealy@anise.ee.cornell.edu	A Single Temperature Process for the Nucleation and Growth of Device Quality AlGaIn/GaN Materials
<b>WP-1.5</b>	2:30	H. P. Gillis, M. J. Christopher, K. P. Martin, and D. A. Choutov	gillis@chem.ucla.edu	Patterning III-N Semiconductors by Low Energy Electron Enhanced Etching (LE4)
<b>WP-1.6</b>	2:45	C.R. Eddy, D. Leonhardt, B. Molnar, V. A. Samamia	ceddy@engc.bu.edu	Issues and Mechanisms in High-Density Plasma Etching of GaN
<b>WP-1HT</b>	3:00	Short Presentations & Hot Topic Discussions		
	3:15	BREAK		
<b>WP-2</b>	3:30	<b>Nitride Epitaxy III (Lateral Epitaxial Overgrowth)</b>		
<b>WP-2.1</b>	3:30	R. Davis, A. Banks, D. Hanser, E. Carlson, et al.	Robert_Davis@ncsu.edu	Single and Double Lateral Epitaxial Overgrowth of GaN on SiC
<b>WP-2.2</b>	3:45	S. P. DenBaars, H. Marchand, J. P. Ibbetson, P. T. Fini, S. Chichibu, S. J. Rosner, S. Keller, J. S. Speck, and U. K. Mishra	denbaars@engineering.ucs b.edu	Lateral Epitaxial Overgrowth (LEO) of Low Defect Density GaN on Sapphire and Si (111) Substrates
<b>WP-2.3</b>	4:00	J. Park, P. A. Grudowski, C. J. Eiting, R. D. Dupuis, and Z. Liliental-Weber	dupuis@mail.utexas.edu	Growth and Properties of Lateral Epitaxial Overgrown III-N Materials by Metalorganic Chemical Vapor Deposition
<b>WP-2.4</b>	4:15	P. Kung, D. Walker, M. Hamilton, J. Diaz, and M. Razeghi	razeghi@epsilon.ece.nyu.edu	Lateral Epitaxial Overgrowth of GaN Thin Films on Sapphire and Silicon
<b>WP-2.5</b>	4:30	W. Yang, S. A. McPherson, Z. Mao, S. McKernan, and C. B. Carter	yang_wei@htc.honeywell.com	Lateral Epitaxial Overgrowth of GaN/AlN on Si
<b>WP-2.6</b>	4:45	Z. Liliental-Weber, J. Washburn, J. Park, P. A. Grudowski, C. J. Eiting, and R. D. Dupuis	z_liliental-weber@lbl.gov	TEM Study of Defects in Laterally Overgrown GaN Layers
<b>WP-2.7</b>	5:00	J. A. Freitas, Jr., O. H. Nam, R. F. Davis, G. V. Sagarin, and S. K. Obyden	freitas@bloch.nrl.navy.mil	Intrinsic Properties of Lateral Epitaxial Overgrown GaN Layers
<b>WP-2.8</b>	5:15	K. J. Nam, A. Sampath, D. Doppalapudi, H. M. Ng, R. S. Mann, E. Iliopoulos, M. Misra, and T. D. Moustakas	tdm@panda.bu.edu	Lateral Epitaxial Overgrowth of GaN on Sapphire by the VPE Method
<b>WP-2.9</b>	5:30	J. R. Shealy, J. A. Smart, and E. M. Chumbes	shealy@anise.ee.cornell.edu	Single-Step, Single-Temperature Process for Epitaxial Lateral Overgrowth of GaN on SiC and Sapphire Substrates
<b>WP-2HT</b>	5:45	Short Presentations & Hot Topic Discussions		
	7:00	WORKSHOP BUFFET DINNER—Adam's Mark Hotel Room ???		



**Fifth Wide Bandgap Nitride Semiconductor Workshop Schedule,  
St. Louis MO, 4-7 August 1998**

Session	Time	Authors (Presenter's Name in Bold)	Contact e-Mail	Title of Talk
<b>THUR 8/6</b>	<b>7:15</b>	<b>CONTINENTAL BREAKFAST</b>		
<b>TA-1</b>	<b>8:15</b>	<b>Electronic Properties and Devices —</b>		
<b>TA-1.1</b>	<b>8:15</b>	<b>J. C. Zolper</b>	zolperj@onr.navy.mil	Overview of US Navy Interest in Wide-Bandgap Semiconductors
<b>TA-1.2</b>	<b>8:30</b>	A. F. Fung, C. Cai, P. P. Ruden, <b>M. I. Nathan</b> , M. Y. Chen, B. T. McDermott, and G. J. Sullivan	nathan@ece.umn.edu	Hydrostatic and Uniaxial Stress Dependence of the Channel Conductivity of n-AlGaIn/GaN Modulation Doped Structures on Sapphire Substrates
<b>TA-1.3</b>	<b>8:45</b>	<b>B. T. McDermott</b> , R. Pittman, M. Chen, and E. Gertner	btmcderm@rsc.rockwell.com	Recent Results on 2DEG Mobilities for AlGaIn/GaN Heterostructures
<b>TA-1.4</b>	<b>9:00</b>	<b>L. F. Eastman</b> and K. Chu	lfe@iiv.tn.cornell.edu	Piezoelectric AlGaIn/GaN Microwave Power HEMT's
<b>TA-1.5</b>	<b>9:15</b>	<b>R. Gaska</b> , A. Ping, I. Adesida, A. Dickens, M. S. Shur, V. Kuksenkov, and H. Temkin	remis@apaoptics.com	High-Frequency, Low-Noise Performance of AlGaIn-GaN HFETs on Insulating 4H-SiC at Elevated Temperatures
<b>TA-1.6</b>	<b>9:30</b>	<b>R. Gaska</b> , A. Ping, I. Adesida, A. Dickens, and M. S. Shur	remis@apaoptics.com	AlGaIn/GaN-based HFETs for Digital Applications
<b>TA-1HT</b>	<b>9:45</b>	<b>Short Presentations &amp; Hot Topic Discussions</b>		
	<b>10:00</b>	<b>BREAK</b>		
<b>TA-2</b>	<b>10:15</b>	<b>HFETs and Photodetectors —</b>		
<b>TA-2.1</b>	<b>10:15</b>	R. P. Vaudo, V. M. Phanse, <b>J. M. Redwing</b> , Z. Z. Bandic, P. M. Bridger, E. C. Piquette, R. A. Beach, and T. C. McGill	jredwing@atmi.com	GaN Epitaxy for High Power Devices
<b>TA-2.2</b>	<b>10:30</b>	<b>B. J. Thibeault</b> , Y. F. Wu, B. P. Keller, and U. K. Mishra	thibeault@witech.com	Correlation of Trapping Effect to Microwave Power Performance of AlGaIn/GaN HEMTs
<b>TA-2.3</b>	<b>10:45</b>	<b>D. Grider</b> , C. Nguyen, N. Nguyen	dgrider@hrl.com	GaN MODFET Microwave Power Technology
<b>TA-2.4</b>	<b>11:00</b>	D. L. H. Lambert and <b>R. D. Dupuis</b>	dupuis@mail.utexas.edu	Modeling of AlGaIn HFET Performance
<b>TA-2.5</b>	<b>11:15</b>	<b>W. Yang</b> , T. Nohava, R. Torrealano, S. McPherson, and H. Marsh	yang_wei@htc.honeywell.com	High Gain GaIn/AlGaIn Heterojunction Phototransistor
<b>TA-2.6</b>	<b>11:30</b>	<b>J. C. Carrano</b> , T. Li, D. Brown, P. A. Grudowski, C. J. Eiting, R. D. Dupuis, and J. C. Campbell	jcarrano@mail.utexas.edu	High-speed UV III-V Nitride Photodetectors
<b>TA-2.7</b>	<b>11:45</b>	<b>M. Schurman</b> , J. Ramer, C. Tran, I. Ferguson, T. Li, J. C. Carrano, and J. C. Campbell	matt@emcore.com	The Relationship in Material Quality to Breakdown Mechanisms in AlGaIn Based Photodetectors
<b>TA-2.8</b>	<b>12:00</b>	<b>S. Krishnakutty</b> , W. Yang, and T. Nohava	krishnakutty_subash@htc.honeywell.com	Growth and Characterization of AlGaIn and Development of AlGaIn Based Photodiodes
<b>TA-2HT</b>	<b>12:15</b>	<b>Short Presentations &amp; Hot Topic Discussions</b>		
	<b>12:30</b>	<b>LUNCH — ON YOUR OWN — EXPLORE St. Louis</b>		



**Fifth Wide Bandgap Nitride Semiconductor Workshop Schedule,  
St. Louis MO, 4-7 August 1998**

Session	Time	Authors (Presenter's Name in Bold)	Contact e-Mail	Title of Talk
<b>TP-1</b>	2:00	<b>Optoelectronic Devices and Processing —</b>		
TP-1.1	2:00	<b>H. P. Maruska</b> , M. Lioubtshenko, M. Osinski, S. Pearton, and R. Shul	maruska@pop.tiac.net	GaN Blue Light-Emitting Diodes Created by Ion Implantation
TP-1.2	2:15	<b>C. H. Chen</b> , G. Christenson, W. Goetz, S. Lester, H. Liu, P. Martin, S. Kern, M. Perry, S. Rudaz, D. Steigerwald, J. Yu, L. Cook, R. M. Fletcher, C. P. Kuo, and M. G. Craford	changhua_chen@hp.com	Bright Nitride LEDs by MOCVD
TP-1.3	2:30	<b>D. A. Stocker</b> , E. F. Schubert, K. S. Boutros, and J. M. Redwing	efs@bu.edu	Fabrication of Smooth GaN-based Laser Facets
TP-1.4	2:45	A. C. Abare, M. P. Mack, M. Hansen, R. K. Sink, P. Kozodoy, S. Keller, J. S. Speck, J. E. Bowers, U. K. Mishra, L. A. Coldren, and <b>S. P. DenBaars</b>	denbaars@engineering.ucs b.edu	Cleaved and Etched Facet Blue-Violet Laser Diodes
TP-1.5	3:00	<b>J. J. Song</b> , S. Bidnyk, T. J. Schmidt, Y. H. Cho, S. Keller, S. P. DenBaars and W. Yang	jjsong@okway.okstate.edu	Stimulated Emission Studies of MOCVD-Grown GaN and InGaN Structures
TP-1.6	3:15	<b>J. E. Edmond</b> , K. Doverspike, H. K. Kong, M. Leonard, H. Dieringer, and D. Emerson.	john_edmond@cree.com	GaN Based Emitters on SiC Grown by MOCVD
TP-1HT	3:30	<b>Short Presentations &amp; Hot Topic Discussions</b>		
	3:45	<b>BREAK</b>		
<b>TP-2</b>	4:00	<b>Optical Characterization of Nitride Materials —</b>		
TP-2.1	4:00	<b>M. J. Bergman</b> , H. C. Casey, Jr., J. F. Muth, Y. C. Chang, R. M. Kolbas, R. A. Rao, C. B. Eom, and M. Schurman	mjb@phy.duke.edu	Optical Properties of Mg-doped Al 0.09 Ga 0.91 N with Protrusions from a Smooth Surface
TP-2.2	4:15	Y. H. Cho, T. J. Schmidt, S. Bidnyk, G. H. Gainer, <b>J. Song</b> , S. Keller, S. P. DenBaars	jjsong@okway.okstate.edu	Optical Characterization of GaN, InGaN, and InGaN/GaN Multiple Quantum Wells Grown by Metalorganic Chemical Vapor Deposition
TP-2.3	4:30	<b>A. Eisenbach</b> , D. Pavlidis, A. Philippe, C. Bru-Chervallier, C. Dubois, and G. Guillot	pavlidis@umich.edu	Photoluminescence and X-ray Diffraction Characteristics of GaN Layers Grown on Sapphire and SOI Substrates
TP-2.4	4:45	<b>M. Osinski</b> , P. G. Eliseev, and V. A. Smagley	osinski@chtm.unm.edu	Band-Tailing Effects in Optical Properties of InGaN Films
TP-2.5	5:00	S. Kim, S. J. Rhee, J. M. Myoung, K. Kim, X. Li, J. J. Coleman, and <b>S. G. Bishop</b>	sgbishop@uiuc.edu	A Study of Er3+ Photoluminescence (PL) in Er-implanted GaN
TP-2.6	5:15	<b>M. Feng</b> , H. Hsia, Z. Tang, D. Becher, R. D. Dupuis, P. A. Grudowski, and C. J. Eiting	mfeng@hsic.ccs.m.uiuc.edu	Optical and Electrical Studies of Ion-Implanted GaN
TP-2.7	5:30	E. Iliopoulos, D. Doppalapudi, H. M. Ng, and <b>T. D. Moustakas</b>	tmd@panda.bu.edu	Near Bandgap Photoluminescence in n-GaN Films
TP-2HT	5:45	<b>Short Presentations &amp; Hot Topic Discussions</b>		
	7:00	<b>WORKSHOP BUFFET DINNER—Adam's Mark Hotel Room ???</b>		

**Fifth Wide Bandgap Nitride Semiconductor Workshop Schedule,  
St. Louis MO, 4-7 August 1998**

Session	Time	Authors (Presenter's Name in Bold)	Contact e-Mail	Title of Talk
<b>FRI 8/7</b>	7:15	<b>CONTINENTAL BREAKFAST</b>		
<b>FA-1</b>	8:30	<b>Materials Characterization —</b>		
<b>FA-1.1</b>	8:30	<b>M. D. Bremser</b> , H. Protzmann, B. Wachtendorf, O. Schoen, D. Schmitz, M. Heuken, E. Woelk, and H. Juergensen	mb@aixtron.com	Growth of InGaN/GaN Device Structures for the Optimization of Multiwafer MOVPE Reactors
<b>FA-1.2</b>	8:45	<b>Z. Liliental-Weber</b> , B. Monemar, and J. Washburn	z_liliental-weber@lbi.gov	Polarity of Homoepitaxial and Heteroepitaxial GaN
<b>FA-1.3</b>	9:00	<b>Z. Q. Fang</b> , D. C. Reynolds, and D. C. Look	zqf@corvus.wright.edu	Electrical Characterization Associated with Degradation of InGaN Blue Light-Emitting Diodes
<b>FA-1.4</b>	9:15	A. K. Fung, J. A. Borton, <b>M. I. Nathan</b> , J. M. Van Hove, and R. Hickman II	afung@ece.umn.edu	A Study of the Electrical Characteristics of Various Metal Contacts to p-type GaN
<b>FA-1.5</b>	9:30	<b>A. Saxler</b> , M. Ahoujja, W. C. Mitchel, P. Kung, X. Zhang, D. Walker, and M. Razeghi	saxleraw@ml.wpafb.af.mil	Electrical Properties of AlGaIn Growth
<b>FA-1.6</b>	9:45	<b>A. K. Rice</b> and K. J. Malloy	arice@chtm.chtm.unm.edu	Temperature Dependent Hall Measurements and Noise Processed in Magnesium-Doped GaN Grown on Sapphire
<b>FA-1.7</b>	10:00	<b>D. C. Look</b> and J. R. Sizelove	lookd@el.wpafb.af.mil	Effect of Threading Dislocations on Mobility in GaN
<b>FA-1HT</b>	10:15	<b>Short Presentations &amp; Hot Topic Discussions</b>		
	10:30	<b>Closing Remarks</b>		
	10:45	<b>BREAK</b>		
	11:00	<b>END OF WORKSHOP</b>		

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No	Authors (Presenter Bold)	Presenter's e-Mail	Title of Talk	Sess.	Time	Paper Topic	Other Topics	Notes
1								
1	M. Suscavage, M. Harris, D. Bliss, P. Yip, S. Q. Wang, D. Schwall, L. Bouthillier, <b>M. N. Alexander</b> , J. Bailey, M. Callahan, D. C. Look, D. C. Reynolds, R. L. Jones, and C. W. Litton	alexande@maxwell.rli.ph.af.mil	High Quality Hydrothermal ZnO Crystals		1			
2								
3	<b>L. J. Schowalter</b>	schowl@rpi.edu	Bulk AlN Substrate Characterization		1			
4	<b>J. E. Nause</b> and G. Agarwal	oermeting@juno.com	Growth of Bulk ZnO Crystals for Wide Bandgap Applications		1			
5	R. Held, S. Seutter, B. E. Ishaug, A. Parkhomovsky, A. M. Dabiran, and <b>P. I. Cohen</b>	cohen@ece.umn.edu	Nitride MBE on Bulk Substrates		3			
6	<b>W. J. Schaff</b>	schaff@iiv.tn.cornell.edu	MBE Growth of Normal and Inverted 2-dimensional Electron Gases in GaN		3			
7	<b>H. Morkoc</b>	hmorkoc@vau.edu	Will the real piezoelectric effect standup?		3			
8	<b>C. W. Litton</b> , D. C. Reynolds, J. Van Nostrand, and D. C. Look	litton@el.wpatb.af.mil	Reactive MBE growth and characterization of GaN on the polar faces of bulk C-plane ZnO substrates		3			
9	<b>R. Molnar</b>	rmolnar@ll.mit.edu	VPE of GaN		4			
10	A. E. Nikolaev, Y. V. Melnik, N. I. Kuznetsov, and <b>V. A. Dmitriev</b>	vladimir@tdii.com	Insulating GaN Grown on SiC by HVPE		4		1,2,4	
11	Y. V. Melnik, A. E. Nikolaev, S. I. Stepanov, and <b>V. A. Dmitriev</b>	vladimir@tdii.com	Aluminum Nitride Grown by HVPE		4		1,2,4	
12	R. Beccard, M. Heuken, H. <b>Juergensen</b> , O. Parillaud, M. Illegems	juer@aixtron.com	Design Issues and Operation of GaN Hydride VPE Systems		4			
13	<b>S. Keller</b> , S. F. Chichibu, M. S. Minsky, A. C. Abare, L. A. Coldren,	stacia@ece.ucsb.edu	MOCVD Growth of InGaN/GaN Single and Multi Quantum Wells		4		4,5,6,7,9,10	
14	<b>M. A. Khan</b> , J. Yang, and T. W. Weeks, Jr.	asif@engr.sc.edu	MOCVD of III-Nitrides for Optoelectronic and Microelectronic Device Applications		4		6,9	
15	<b>J. R. Shealy</b>	shealy@anise.ee.cornell.edu	A Single Temperature Process for the Nucleation and Growth of Device Quality AlGaIn/GaN Materials		4			
16	<b>S. P. DenBaars</b> , H. Marchand, J. P. Ibbetson, P. T. Fini, S. Chichibu, S. J. Rosner, S. Keller, J. S. Speck, and U. K. Mishra	denbaars@engineering.ucsb.edu	Lateral Epitaxial Overgrowth (LEO) of Low Defect Density GaN on Sapphire and Si (111) Substrates		5			

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16	J. Park, P. A. Grudowski, C. J. Eiting, <b>R. D. Dupuis</b> , and Z. Liliental-Weber	dupuis@mail.utexas.edu	Growth and Properties of Lateral Epitaxial Overgrown III-N Materials by Metalorganic Chemical Vapor Deposition		5			
17	J. A. Freitas, Jr., O. H. Nam, R. F. Davis, G. V. Saparin, and S. K. Obyden	freitas@bloch.nrl.navy.mil	Intrinsic Properties of Lateral Epitaxial Overgrown GaN Layers		5			
18	P. Kung, D. Walker, M. Hamilton, J. Diaz, and M. Razeghi	razeghi@epsilon.ece.nwu.edu	Lateral Epitaxial Overgrowth of GaN Thin Films on Sapphire and Silicon		5			
19	W. Yang, S. A. McPherson, Z. Mao, S. McKernan, and C. B. Carter	yang_wei@htc.honeywell.com	Selective Area Growth of GaN/AlN on Si		5			
20	K. J. Nam, A. Sampath, D. Doppalapudi, H. M. Ng, R. S. Mann, E. Iliopoulos, M. Misra, and <b>T. D. Moustakas</b>	tdm@panda.bu.edu	Lateral epitaxial overgrowth of GaN on sapphire by the VPE method		5			
21	K. J. Nam, A. Sampath, D. Doppalapudi, H. M. Ng, R. S. Mann, E. Iliopoulos, M. Misra, and <b>T. D. Moustakas</b>	tdm@panda.bu.edu	Lateral epitaxial overgrowth of GaN on sapphire by the VPE method		5			
22	M. J. Bergman, H. C. Casey, Jr., J. F. Muth, Y. C. Chang, R. M. Kolbas, R. A. Rao, C. B. Eom, and M. Schurman	mjb@phy.duke.edu	Optical Properties of Mg-doped Al 0.09 Ga 0.91 N with Protrusions from a Smooth Surface		6		10	
23	A. Eisenbach, D. Pavlidis, A. Philippe, C. Bru-Chevallier, C. Dubois, and G. Guillot	pavlidis@umich.edu	Photoluminescence and X-ray Diffraction Characteristics of GaN Layers Grown on Sapphire and SOI Substrates		6		4,2	
24	D. C. Look and J. R. Sizelove	lookd@el.wpafb.af.mil	Effect of Threading Dislocations on Mobility in GaN		6			
25	A. F. Fung, C. Cai, P. P. Ruden, M. I. Nathan, M. Y. Chen, B. T. McDermott, and G. J. Sullivan	nathan@ece.umn.edu	Hydrostatic and Uniaxial Stress Dependence of the Channel Conductivity of n-AlGaIn/GaN Modulation Doped Structures on Sapphire Substrates		6			
26	M. Osinski, P. G. Eliseev, and V. A. Smagley	osinski@chtm.unm.edu	Band tailing effects in optical properties of InGaIn films		6		10	
27	A. K. Rice and K. J. Malloy	arice@chtm.chtm.unm.edu	Temperature Dependent Hall Measurements and Noise Processed in Magnesium-Doped GaN Grown on Sapphire		6			
28	Y. H. Cho, T. J. Schmidt, S. Bidnyk, G. H. Gainer, <b>J. J. Song</b> , S. Keller, S. P. DenBaars	jjsong@okway.okstate.edu	Optical Characterization of GaN, InGaIn, and InGaIn/GaN Multiple Quantum Wells Grown by Metalorganic Chemical Vapor Deposition		6			
29	M. Feng, H. Hsia, R. D. Dupuis, P. A. Grudowski, and C. J. Eiting	mfeng@hsc.ccsu.uiuc.edu	Optical and Electrical Studies of Ion-Implanted GaN		6			
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30	Z. Liliental-Weber, J. Washburn, J. Park, P. A. Grudowski, C. J. Eiting, and R. D. Dupuis	z_liliental-weber@lbl.gov	TEM Study of Defects in Laterally Overgrown GaN Layers		7			
31	Z. Liliental-Weber, M. Bonemara, and J. Washburn	z_liliental-weber@lbl.gov	Polarity of Homoepitaxial and Heterospitaxial GaN		7			
32	D. Doppalapudi, M. Misra, D. Korakakis, E. Iliopoulos, S. N. Basu, K. F. Ludwig, Jr., and T. D. Moustakas	tdm@panda.bu.edu	Long range atomic ordering in InGaAlN alloys		7			
33	S. Kim, S. J. Rhee, J. M. Myoung, K. Kim, X. Li, J. J. Coleman, and S. G. Bishop	sgbishop@uiuc.edu	A Study of Er <sup>3+</sup> Photoluminescence (PL) in Er-Implanted GaN		8	6, 10		
34	Z. Q. Fang, D. C. Reynolds, and D. C. Look	zqf@corvus.wright.edu	Electrical Characterization Associated with Degradation of InGaN Blue Light-Emitting Diodes		8			
35	A. K. Fung, J. A. Borton, M. I. Nathan, J. M. Van Hove, and R. Hickman II	afung@ece.umn.edu	A Study of the Electrical Characteristics of Various Metal Contacts to p-type GaN		8			
36	A. Saxler, M. Ahouja, W. C. Mitchell, P. Kung, X. Zhang, D. Walker, and M. Razeghi	saxleraw@ml.wpafb.af.mil	Electrical Properties of AlGaIn Growth		8			
37	H. P. Gillis, M. J. Christopher, K. P. Martin, and D. A. Choutov	gillis@chem.ucla.edu	Patterning III-N Semiconductors by Low Energy Electron Enhanced Etching (LE4)		8			
38	C.R. Eddy, D. Leonhardt, B. Molnar, V. A. Samamia	ceddy@engc.bu.edu	Issues and Mechanisms in High-Density Plasma Etching of GaN		8			
39	L. F. Eastman and K. Chu	lfe@iiv.tn.cornell.edu	Piezoelectric AlGaIn/GaN Microwave Power HEMT's		9			
40	R. Gaska, A. Ping, I. Adesida, A. Dickens, M. S. Shur, V. Kuksenkov, and H. Temkin	remis@apaoptics.com	High-Frequency, Low-Noise Performance of AlGaIn-GaN HFETs on Insulating 4H-SiC at Elevated Temperatures		9			
41	R. Gaska, A. Ping, I. Adesida, A. Dickens, and M. S. Shur	remis@apaoptics.com	AlGaIn/GaN-based HFETs for Digital Applications		9			
42	D. Grider, C. Nguyen, N. Nguyen	dgrider@hrl.com	GaN MODFET Microwave Power Technology		9	3, 8, 9		
43	R. P. Vaudo, V. M. Phanse, J. M. Redwing, Z. Z. Bandic, P. M. Bridger, E. C. Piquette, R. A. Beach, and T. C. McGill	jredwing@atmi.com	GaN Epitaxy for High Power Devices		9	4		
44	B. J. Thibeault, Y. F. Wu, B. P. Keller, and U. K. Mishra	thibeault@witech.com	Correlation of Trapping Effect to Microwave Power Performance of AlGaIn/GaN HEMTs		9			
45	W. Yang, T. Nohava, R. Torreano, S. McPherson, and H. Marsh	yang_wei@htc.honeywell.com	High Gain GaN/AlGaIn Heterojunction Phototransistor		9			

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46	D. L. H. Lambert and R. D. Dupuis		dupuis@mail.utexas.edu	Modeling of AlGaN HFET Performance			9		
47	B. T. McDermott, R. Pittman, M. Chen, and E. Gertner		bjmcdermott@rsc.rockwell.mail	Recent Results on 2DEG Mobilities for AlGaN/GaN Heterostructures			9		
48	A. C. Abare, M. P. Mack, M. Hansen, R. K. Sink, P. Kozodoy, S. Keller, J. S. Speck, J. E. Bowers, U. K. Mishra, L. A. Coldren, and S. P. DenBaars		denbaars@engineering.ucsb.edu	Cleaved and Etched Facet Blue-violet Laser Diodes			10		
49	H. P. Maruska, M. Lioubtshenko, M. Osinski, S. Pearton, and R. Shul		maruska@pop.tiac.net	GaN Blue Light-Emitting Diodes Created by Ion Implantation			10		
50	M. D. Bremser, H. Protzmann, B. Wachtendorf, O. Schoen, D. Schmitz, M. Heuken, E. Woelk, and H. Juergensen		mb@aixtron.com	Growth of InGaN/GaN Device Structures for the Optimization of Multiwafer MOVPE Reactors			10		
51	C. H. Chen, G. Christenson, W. Goetz, S. Lester, H. Liu, P. Martin, S. Kern, M. Perry, S. Rudaz, D. Steigerwald, J. Yu, L. Cook, R. M. Fletcher, C. P. Kuo, and M. G. Craford		changhua_chen@hp.com	Bright Nitride LEDs by MOCVD			10		
52	S. Krishnankutty, W. Yang, and T. Nohava		krishnankutty_subash@htc.honeywell.com	Growth and Characterization of AlGaN and Development of AlGaN Based Photodiodes			10		
53	M. Schurman, J. Ramer, C. Tran, I. Ferguson, T. Li, J. C. Carrano, and J. C. Campbell		matt@emcore.com	The Relationship in Material Quality to Breakdown Mechanisms in AlGaN Based Photodetectors			10		
54	J. J. Song, S. Bidnyk, T. J. Schmidt, Y. H. Cho, S. Keller, S. P. DenBaars and W. Yang		jjsong@okway.okstate.edu	Stimulated Emission Studies of MOCVD-Grown GaN and InGaN Structures			10		
55	K. Doverspike and J. Edmond		kathy_doverspike@cree.com	InAlGaIn Injection Lasers on SiC Grown by MOCVD			10		
56	D. A. Stocker, E. F. Schubert, K. S. Boutros, and J. M. Redwing		efs@bu.edu	Fabrication of Smooth GaN-based Laser Facets			10		
57	J. C. Carrano, T. Li, D. Brown, P. A. Grudowski, C. J. Eiting, R. D. Dupuis, and J. C. Campbell		jcarrano@mail.utexas.edu	High-speed UV III-V Nitride Photodetectors			10		
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